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EAS 248 (2001) (English): Textiles — Methods for determination of threads per centimetre in woven fabrics



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EAST AFRICAN STANDARD

Textiles — Methods for determination of threads per centimetre in woven fabrics

EAST AFRICAN COMMUNITY

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Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in East Africa. It is envisaged that through harmonized standardization, trade barriers which are encountered when goods and services are exchanged within the Community will be removed.

In order to achieve this objective, the Partner States in the Community through their National Bureaux of Standards, have established an East African Standards Committee.

The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the private sectors and consumer organizations. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the procedures of the Community.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

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Textiles — Methods for determination of threads per centimetre in woven fabrics

1 Scope

This East African Standard prescribes main methods for determination of warp threads and weft threads per centimetre in woven fabrics.

2 Application

The methods apply to all woven fabrics irrespective of their composition (that is, whether they are made of cotton, wool, silk, jute, kenaf, man-made or blends of two or more such fibres).

3 Definitions

For the purpose of this standard, the definitions given in ISO 6938[*], ISO 2076[**] and KS 08-213[***] shall apply.

4 Principle

Three methods of determining the number of threads per centimetre are prescribed here, any of which may be used, the choice depending on the character of the fabric.

The principles are as follows:

Method A,The number of threads visible within the aperture of a standard-counting glass counted.

Method B, The number of threads per centimetre of the fabric is determined with the aid of a traversing thread counter.

Method C, A section of fabric is dissected and the number of threads counted. The threads that are to be counted are in accordance with Table 1.

5 Conditioning of test specimens

Prior to the test, the specimens shall be conditioned to the moisture equilibrium in the standard atmosphere in accordance with EAS 240[♣].

NOTE The time required for a fabric to reach moisture equilibrium depends mainly on

a) the thickness of the fabric (mass per unit area);

b) the closeness of the weave;

c) the hygroscopicity of the textile material comprising the fabric; and

d) type of finish given to the fabric.

When the test specimens have been exposed to the standard atmosphere for at least as much time as given below in such a way as to expose as far as possible all portions of the specimens to the

[*] Textiles — Natural fibres — Generic names and definitions

[**] Textiles — Man-made fibres — Generic names

[***] Glossary of textile terms relating to jute

[♣] Textiles — Standard atmospheres for conditioning and testing

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atmosphere, they shall be deemed to have been conditioned satisfactorily for the purpose of this test:

Materials having equilibrium moisture regain values at — Time, hours

Standard atmosphere

Less than 4	6
4 to 10	12
Above 10	24 to 48

6 Atmosphere for testing

The test shall be carried out in the standard atmosphere for testing (see 4).

7 Test specimens

7.1 No specially prepared specimens are required, but for Method C ensure adequate size of test specimen.

7.2 Determination shall not be made

a) within 5.0 cm from the selvedges; or

b) within two metres from either end of a piece, roll or bolt.

7.3 In the case of fabrics having width from 10 cm to 20 cm, the selvedge ends shall be excluded whilst counting the threads per centimetre.

7.4 For narrow fabrics of width 10.0 cm or less, all warp threads including selvedge ends shall be counted and expressed as threads per full width.

7.5 **Design fabrics** — When a pattern is formed by varying the number of ends or picks per centimetre,

a) the number of whole repeats; and

b) the remaining units; in the distance across which the threads are to be counted.

Calculate from the data so obtained, the mean number of threads per centimetre, warp-way and weft-way.

7.5 Where relatively broad areas of pattern occur, record the number of threads per centimetre in each different portion of the pattern.

8 Minimum measuring distance

For all three test methods, the minimum distance shall conform to that given in Table 1. Accordingly the number of readings shall be taken.

Table 1 — Minimum measuring distance

S/No	No. of threads per centimeter (warp or weft)	Measuring minimum distance *cm*	Accuracy of an individual measurement
1	Less than 10	10	0.1
2	10 to 50	5	0.2
3	More than 50	2	0.5

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For the purpose of determining the minimum measuring across which the number of threads shall be counted, assume the fabric to have the number of warp and weft thread per centimetre as in the material specifications, and then determine the number of threads per centimetre in one or two places.

9 Choice of test method

9.1 Methods A and B (see clauses 10.1 and 10.2*)* — These methods are suitable for fabrics in which the individual threads can be easily identified with a thread-counting glass

9.2 Method C (see clause 10.3) — This method is suitable for fabrics in which, the individual threads cannot be easily identified with thread-counting glass .

NOTE 1 These methods may not be applicable to certain special type of fabrics such as lappet, moleskin, leno weaves, etc.

NOTE 2 In the case of open weave fabrics, the number of threads per centimetre may be counted over a measuring distance of 10.00 cm using the naked eye expressing the test result as threads per 10.00 cm.

10 Procedure

10.1 Method A — by counting glass.

10.1.1 *Apparatus* — Counting glass, the aperture width of which shall be 2 cm ± 0.005 cm at all places. The thickness of the base at the edges of the aperture shall not exceed 0.1 cm.

10.1.2 Use a measuring distance in accordance with (3) in Table 1.

10.1.3 Lay the fabric flat on a horizontal surface and place, the glass on the fabric so that one of the edges of its aperture is parallel to the warp threads. Count the number of warp threads, or weave repeats or number of warp thread units and fractions of a unit bounded by the appropriate pair of opposite sides of the aperture. Repeat with one of the edges of the aperture parallel to the weft threads, and count the number of weft threads or weave repeats or number of weft thread units in a similar manner. For both warp-way and weft-way directions, make five determinations each.

10.1.4 If the face of the fabric is composed mainly of one set of threads, as with certain twills, sateens, etc., count on the back of the fabric where the weave design is more readily recognizable.

10.2 Method B — by traversing thread counter.

10.2.1 *Apparatus* — The following is required: Low-power microscope of magnification 4X to 20X mounted such that it can be traversed by means of a screw over a graduated base. Types with an index lane in the eye-piece or a pointer traversing with and visible through the microscope are equally suitable.

10.2.2 Use a measuring distance in accordance with that shown in table 1.

10.2.3 Lay the fabric flat on a horizontal surface and place the thread counter upon it in such a way that when the screw is turned the microscope moves across the fabric in a direction that is either parallel to the warp or parallel to the weft, depending on which set of threads is being counted. For both warp-way and weft-way directions, make , five determinations each.

10.2.4 If it is not possible to count every thread passed by the pointer or index line as it moves across the fabric, count the weave repeats. In this case, begin counting from a yarn in the weave repeat which can be readily identified. Count the number of whole repeats in the measuring distances, plus the remaining individual yarns.

10.3 Method C — by dissection of fabric.

10.3.1 *Apparatus* — The following are required:

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a) Clamp holding two short pins, parallel to each other and with their points within 0.02 cm of the minimum measuring distance chosen.

b) Pair of pointed forceps.

c) Two dissecting needles and a heavy steel rule, if a clamp is not available.

10.3.2 Use a measuring distance in accordance with that shown in Table 1.

10.3.3 Lay the test specimen flat on a horizontal surface and pass the pin in the clamp through it, 0.2 cm to 0.3 cm each end, such that, the line joining the pins is perpendicular to the direction of warp or weft depending on which set of thread is under test. Remove the thread from the specimen outside the two pins so that the measuring distance of fabric between the pins remains. Using a pair of pointed forceps, remove the threads from the specimen and count them. Count any thread imparted on either pin as half a thread. For both warp-way and weft-way directions, make five determinations each.

10.3.4 Where a clamp is not available, insert two dissecting needles into the test specimen along the required measuring distance by sliding their points down the appropriate graduation marks of a heavy steel rule placed on edge over the test specimen. Using a similar procedure as described in 10.3.3, make five determinations in both warp-way and weft-way directions.

10.3.5 In the case of a design fabric, measure the distance covered by one or more complete units of the patterned area to an accuracy of 0.25 cm over a distance of at least 10 cm using a steel rule. Count the number of threads in one complete repeat and calculate the mean threads per centimetre.

11 Calculation and expression of test results

For any of the test methods used, quote the individual test result and calculate the mean number of threads per centimetre for each direction, expressing that for warp threads as ends per centimetre and that for weft threads as picks per centimetre. When required, the test results may be quoted in threads per 10.0 cm. The number of threads per square centimetre is given by the sum of the mean ends and picks per centimetre.

12 Test report

Report individually

a) description of the test specimen;

b) method used; and

c) results of tests:

i) ends per centimetre,

ii) picks per centimetre.

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